

BESSIOE**PURPOSE**

Compute the exponentially scaled modified Bessel function of order 0.

DESCRIPTION

This function can be defined as:

$$\text{BESSIOE}(x) = e^{-|x|} I_0(x) \quad (\text{EQ Aux-28})$$

where $I_0(x)$ is the modified Bessel function of order 0. See the documentation for the BESSIO command for a description of this function.

SYNTAX

LET <y2> = BESSIOE(<y1>) <SUBSET/EXCEPT/FOR qualification>
 where <y1> is a number, variable or parameter;
 <y2> is a variable or parameter (depending on what <y1> is) where the computed Bessel value is stored;
 and where the <SUBSET/EXCEPT/FOR qualification> is optional.

EXAMPLES

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LET X2 = BESSIOE(2)
LET A = BESSIOE(X)
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NOTE

DATAPLOT uses the routine BESIOE from the SLATEC Common Mathematical Library to compute this function. SLATEC is a large set of high quality, portable, public domain Fortran routines for various mathematical capabilities maintained by seven federal laboratories.

DEFAULT

None

SYNONYMS

None

RELATED COMMANDS

BESSIO	=	Compute the modified Bessel function of order 0.
BESSI1	=	Compute the modified Bessel function of order 1.
BESSI1E	=	Compute the exponentially scaled modified Bessel function of order 1.
BESSIN	=	Compute the modified Bessel function of order N.
BESSINE	=	Compute the exponentially scaled modified Bessel function of order N.
BESSJN	=	Compute the Bessel function of the first kind and order N.
BESSIN	=	Compute the modified Bessel function of order N.
BESSKN	=	Compute the modified Bessel function of the third kind and order N.

REFERENCE

"Handbook of Mathematical Functions, Applied Mathematics Series, Vol. 55," Abramowitz and Stegun, National Bureau of Standards, 1964 (pages 355-433).

"Numerical Recipes: The Art of Scientific Computing (FORTRAN Version)," 2nd Edition, Press, Flannery, Teukolsky, and Vetterling. Cambridge University Press, 1992 (chapter 6).

APPLICATIONS

Special Functions

IMPLEMENTATION DATE

94/9

PROGRAM

YMINIMUM 0

TITLE AUTOMATIC

PLOT BESSI0E(X) FOR X = -100 0.1 100

